

WHAT IS CLAIMED IS:

1. A method of forming and applying a film structure having controllable surface contact properties comprising:

5 providing a multilayer film structure which has first and second major surfaces and which includes an operating agent therein, the operating agent being spaced from the first major surface of the film structure by a top portion of the film structure, the top portion being defined by predetermined separable surface elements, and the first major surface of the film structure being defined by a plane across separable surface elements;

10 inelastically stretching the multilayer film structure to separate the separable surface elements across the first major surface of the film structure and to increase the exposure of the operating agent through spacings between adjacent separated separable surface elements;

15 applying the first major surface of the film structure to a surface of a substrate; and

20 applying pressure to the second major surface of the film such that the operating agent contacts the structure surface of the substrate.

2 The method of claim 1, wherein the top portion of the multilayer film structure comprises a layer of particles, each particle defining one of the separable surface elements.

25 3. The method of claim 1, wherein the film structure includes a top film layer, wherein the top film layer includes the separable surface elements formed by at least partially cutting the top film layer.

30 4. The method of claim 1, wherein the film assembly includes

a plurality of stems extending from a continuous portion of the film structure, each stem comprising one of the separable surface elements.

5. A film structure formed by the method of claim 1.

6. A method of forming and applying a film structure having controllable surface contact properties comprising:

providing a film structure which has a first major surface, a second major surface, and a top portion under the first major surface, wherein the top portion includes a plurality of particles;

stretching the film structure to separate the particles across the first major surface of the film structure and to increase the exposure of an intermediate surface of the film structure through spacings between adjacent particles;

10 applying the first major surface of the stretched film structure to a surface of a substrate; and

applying pressure to the second major surface of the film such that the intermediate surface contacts the surface of the substrate.

20 7. The method of claim 6, wherein the film structure further includes an operating agent which at least partially defines the intermediate surface of the film structure.

8. The method of claim 7, wherein the operating agent comprises an adhesive.

25 9. The method of claim 7, wherein after stretching, each portion of the exposed operating agent is in a layer form having an average thickness, and is spaced from the first surface of the film structure by the particles by an average spacing which is equal to or greater than the average thickness of the corresponding portion of the exposed 30 operating agent.

10. The method of claim 6, wherein the stretching is inelastic stretching.

11. The method of claim 6, wherein the plurality of particles are electrically non-conductive.

5 12. The method of claim 6, wherein the film structure is multilayered.

13. The method of claim 12, wherein the multilayer film structure is formed by coextrusion.

10 14. The method of claim 6, wherein prior to the stretching step, the plurality of particles defining the top layer of the film structure are arranged in a tightly packed monolayer.

15 15. The method of claim 6, wherein the stretching step includes biaxially stretching the film structure .

16. The method of claim 12, wherein the stretching step includes simultaneously biaxially stretching the film structure.

20 17. A film structure formed by the method of claim 6.

18. A method of forming a film structure comprising:
providing a film structure which has a first major surface, a second major
25 surface, and a top portion under the first major surface;
cutting the top portion of the film structure such that the top portion defines
a plurality of separable surface elements; and
stretching the film structure to separate the separable surface elements
across the first major surface of the film structure and to increase
30 the exposure of an intermediate surface of the film structure through
spacings between adjacent separated separable surface elements.

19. The method of claim 18, wherein the exposed portions of the intermediate surface form a plurality of recesses, each recess having a recess face spaced from the first major surface and exposed through one of the spacings between adjacent and separated surface elements.

20. The method of claim 18, wherein the film structure further includes an operating agent which at least partially defines the intermediate surface of the film structure.

10 21. The method of claim 20, wherein the operating agent is in a layer form adjacent to and beneath the top layer and wherein when the first major surface of the stretched film structure is applied to a surface of a substrate, the operating agent exhibits noticeably greater contact with the surface of the substrate when pressure is applied on the 15 second major surface of the stretched film structure toward the surface of the substrate.

22. The method of claim 21, wherein the cutting step includes: completely cutting through the top film layer and partially cutting through the operating agent layer.

20 23. The method of claim 20, wherein the operating agent comprises an adhesive.

24. The method of claim 23, the providing step includes: 25 coextruding the adhesive and a masking material, wherein the masking material is the top portion of the film structure.

25. The method of claim 21, wherein the pressure is a finger or hand pressure.

30 26. The method of claim 18, wherein the cutting step includes: completely cutting through the top layer.

27. The method of claim 18, wherein the cutting step includes:
cutting in more than one direction.

5 28. The method of claim 18, wherein the separable surface elements have at
least a density of 400 elements per square inch before stretching.

10 29. The method of claim 28, wherein the separable surface elements have at
least a density of 2500 elements per square inch before stretching.

15 30. The method of claim 29, wherein the separable surface elements have at
least a density of 10,000 elements per square inch before stretching.

31. The method of claim 18, wherein the film structure is multilayered.

15 32. The method of claim 31, wherein the multilayer film structure is formed by
coextrusion.

20 33. The method of claim 18, wherein the stretching step includes biaxially
stretching the film structure.

34. The method of claim 18, wherein the stretching step includes
simultaneously biaxially stretching the film structure.

25 35. The method of claim 18, wherein the stretching is inelastic stretching.

36. A film structure formed by the method of claim 21.

30 37. A method of forming and applying a film structure having controllable
surface contact properties comprising:

providing a film structure which has a first major surface and an intermediate layer between the top portion and the second major surface, a second major surface, a top portion under the first major surface, wherein the top portion includes a plurality of stems each defining a separable element; and

5 inelastically stretching the film structure to separate the separable surface elements across the first major surface of the film structure and to increase the exposure of the intermediate layer surface of the film structure through spacings between adjacent separated separable surface elements;

10 applying the first major surface of the film structure to a surface of a substrate; and

applying pressure to the second major surface of the film such that the operating agent contacts the structure surface of the substrate.

15 38. The method of claim 37, further comprising:

applying the first major surface of the film structure to a surface of a structure; and

20 applying pressure to the second major surface of the film structure such that

the intermediate layer contacts the surface of the substrate.

25 39. The method of claim 37, wherein the exposed portions of the intermediate layer form a plurality of recesses, each recess having a recess face spaced from the first major surface and exposed through one of the spacings between adjacent and separated surface elements.

40. The method of claim 37, wherein the film structure further includes an operating agent which at least partially defines the intermediate surface of the film structure.

41. The method of claim 40, wherein the operating agent comprises an adhesive.

42. The method of claim 40, wherein the operating agent comprises an adhesive, and the providing step includes:

coextruding the adhesive and a base material to form an adhesive layer and a continuous layer; and
forming stems extending from the continuous layer.

10 43. The method of claim 42, wherein the stems are formed during the coextruding step.

44. The method of claim 42, wherein the stems extend above the adhesive layer with top ends of the stems substantially devoid of adhesive.

15 45. The method of claim 39, wherein the pressure is a finger or hand pressure.

46. The method of claim 37, wherein the film structure includes a continuous base film layer defining the second major surface of the film structure.

20 47. The method of claim 37, wherein the film structure is multilayered.

48. The method of claim 47, wherein the multilayer film structure is formed by coextrusion.

25 49. The method of claim 37, wherein the stretching step includes biaxially stretching the film structure.

50. The method of claim 37, wherein the stretching step includes 30 simultaneously biaxially stretching the film structure.

51. A film structure formed by the method of claim 37.

52. A method of forming a film structure having controllable surface contact properties comprising:

5 providing a multilayer film structure which has first and second major surfaces and which includes an operating agent therein, the operating agent being spaced from the first surface of the film structure by a top portion of the film structure, the top portion being defined by electrically nonconductive predetermined separable surface elements, and the first surface of the film structure being defined by a plane across the separable surface elements; and

10 stretching the multilayer film structure to separate the separable surface elements across the first surface of the film structure and to increase the exposure of the operating agent through spacings between adjacent separated separable surface elements.

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53. The method of claim 52, further comprising:

applying the first major surface of the film structure to a surface of a substrate; and

20 applying pressure to the second major surface of the film structure such that the operating agent contacts the surface of the substrate.

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54. The method of claim 52, wherein the operating agent comprises an adhesive.

55. The method of claim 52, wherein the top portion of the multilayer film structure comprises a layer of particles, each particle defining one of the separable surface elements.

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56. The method of claim 52, wherein the film structure has a top film layer, and wherein the method further comprises:

defining the separable surface elements by at least partially cutting the top film layer.

57. The method of claim 52, wherein the providing step includes:
5 forming a plurality of stems extending from a continuous portion of the film structure, each stem comprising one of the separable surface elements; and wherein the stretching step includes inelastically stretching.

10 58. The method of claim 52 further comprising the steps of:
applying the first major surface of the film structure to a surface of a substrate; and
applying pressure to the second major surface of the film such that the operating agent contacts the structure surface of the substrate.

15 59. A film structure formed by the method of claim 52.